



AI-POWERED WILDLIFE AUDIO SENTINEL



PROBLEM?



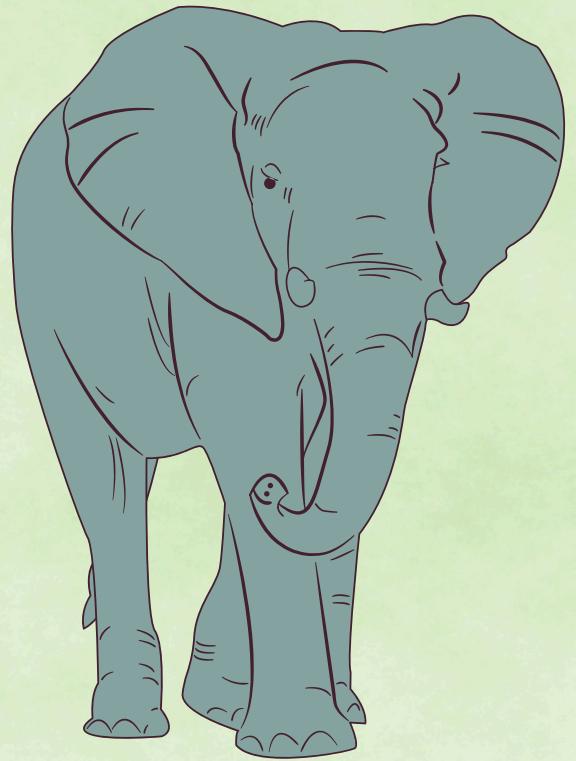
Illegal **poaching activities** threaten global wildlife in remote forest areas

- Traditional surveillance methods are limited by **cost, coverage, and manpower**
- Remote forest areas lack **real-time** gunshot detection capabilities
- By the time authorities respond to poaching incidents, animals are already lost

STAT ATTACK



- Every year, over **20,000 elephants** are killed by poachers in Africa alone. Most gunshots go **undetected** in remote areas where discovery happens days or weeks too late.
- South Africa loses **3 rhinos daily** to poachers using firearms. Immediate gunshot detection could significantly reduce response time from hours to minutes.
- **Illegal wildlife trade** is worth **\$23 billion annually**, with firearms being the primary tool used by poachers targeting endangered species in remote locations.



WHAT ARE WE GONNA D0?



Deploy an **AI-powered audio surveillance system** that:

- Listens **24/7** using **MEMS microphones** to capture environmental sounds
- Detects gunshots in **real-time** using trained CNN model
- Sends **instant alerts** via **Telegram API** through built-in WiFi



WHY IS IT GREAT?



Game Changer Economics

- 10x cheaper than traditional camera surveillance
- Can be Solar-powered for months of autonomous operation

Immediate Impact

- Instant alerts instead of days/weeks delay
- Covers inaccessible remote areas where humans can't patrol

Smart & Simple Deployment

- Plug-and-protect setup - no complex infrastructure needed
- Works anywhere with WiFi connectivity - no cell towers required

HOW?



Hardware Setup

- **Raspberry Pi 5** as main processing unit
- **INMP441 I2S MEMS microphone** for high-quality audio capture

AI Model Development

- Trained **CNN model** on forest sound dataset with MFCC feature extraction
- Achieved 86.36% accuracy in gunshot vs. nature sound classification
- Deployed using **TensorFlow Lite** for real-time edge processing

Smart Alert System

- Noise reduction pipeline filters environmental interference
- Instant notifications sent via **Telegram API** when gunshots detected

THANK YOU



